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ABSTRACT

The evolution of public school financing systems has traced the concern of equal access to dollars to opportunities for equal education which recognizes individual needs or deficiencies to questioning whether schooling makes a difference. The authors provide empirically based data supporting the necessity of equity in the allocation of State educational funds. Effects of the Virginia State aid formula support the contention there is nothing so unequal as the equal treatment of unequals. Assuming continued attempts to validate program equalization vis-a-vis fiscal equalizations, the authors speculate on the research question of whether schools make a difference. Three different interpretations of base-line data (schools make no difference, schools should be supported for nontraditional reasons, and schools are making positive differences) lead to the conclusion that the latest evolution of finance research has exceeded the possibility of objective, impartial conclusion. Fundamental policy implications affecting the vary structure of schooling have made research a form of advocacy planning. In light of this controversy, the authors call for overt specification of conceptual and methodological biases in future research endeavors. (Author)

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AN ANALYSIS OF THE VIRGINIA STATE AID FORMULA AS MEASURED BY SOCIAL, ECONOMIC, AND EDUCATIONAL FACTORS

by

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Presented at the Annual Meeting of the
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AN ANALYSIS OF THE VIRGINIA STATE AID FORMULA AS MEASURED BY SOCIAL, ECONOMIC, AND EDUCATIONAL FACTORS

Traditionally state legislatures have had considerable latitude in establishing public school financing systems. The amount of revenue available to local school districts has depended largely on the wealth of the districts. Although historically the courts have upheld these programs, they are now coming under close scrutiny.

Recent court decisions[1] may well change the patterns of distribution for public secondary and elementary schools. The litigation contends that a "school financing system, with substantial dependence on local property taxes and resultant wide disparities in school revenue, violates the equal protection clause of the Fourteenth Amendment" (to the Constitution of the United States).[2] The Serrano decision also states that "recognizing as we must that the right to an education is a fundamental interest which cannot be conditioned by wealth, we can discern no compelling state purpose necessitating the present method of financing."

Although the recent court decisions deal with the equal access to dollars theory, a more fundamental question is raised. This question is whether a state's responsibility to provide a child with an opportunity for equal education is successfully discharged where no recognition is given to individual needs or deficiencies.

Most authorities agree that the above needs or deficiencies are largely due to a combination of social, economic, and political factors. Although Americans have been aware of economic and social disparities

which have existed universally, nowhere have these events caused so much concern as in the United States in the second half of the Twentieth Century.

The education of today is faced with the underdevelopment of human resources that make for social and economic[3] disparities. These problems that are encountered by large numbers of children in many communities offer the greatest single challenge to existing arrangements for state structuring and financing of education. The allocation of state money for public education may not offer equality of educational opportunity unless individual needs and deficiencies are reorganized. The majority of Virginia state educational funds are distributed under the Basic School Aid Formula. This formula uses minimum teacher salary scale and a fixed pupil-teacher ratio as the criteria for distribution. The Basic School Aid Formula distributed about 65 percent for 1972-73 of state funds while fifteen other funds[4] distributed the remaining 35 percent. (The National Educational Finance Project found inverse relationships between the number of state funding sources and equalization.)[5]

It would appear that slight fiscal equalization is taking place in Virginia. However, the question must be posed concerning not only fiscal equalization but need or program equalization as measured by educational, social, and economic factors.

Need For The Study

There are essentially two ways to equalize educational opportunity: (1) fiscal equalization and (2) educational program equalization. Fiscal equalization is accomplished by determining by some standard measure the

wealth of the school district and then rewarding with funds, the districts with the least ability. This is purely a measure of fiscal ability and does not take into consideration possible deviation and differentials in educational needs of children. On the other hand, educational program equalization attempts to identify the variation of educational needs of pupils.

While both methods used separately will equalize educational opportunity to some extent, it hardly needs to be pointed out that when used in concert they have much greater equalization tendencies. Virginia does not take these equalization methods into consideration.

Statement of Problem

Since the Virginia State Aid program distributes only about thirty-one percent of the total expenditures for education, the question must be posed as to whether the present program is meeting the needs of all children and would it meet the criteria established by recent court decisions. It is the problem of this paper to investigate the equalization of the present program in meeting the needs of children as measured and analyzed by selected social and economic factors.

Delimitation

The scope of this study will be restricted by the following delimitations:

1. Only Virginia School districts will be included in the study.
2. Data will be collected for the 1972-73 school year.
3. Only 26 selected factors will be included in the study, including eight different levels of achievement and reading scores.

Procedure of the Study

Data were collected from various sources: State Department of Education, local school divisions, Bureau of Census, and economic studies. The results were analyzed by both a step-wise multiple-regression and factor analysis programs to determine relationships between the selected factors. The step-wise multiple-regression program used was a Biomedical 02R, Linear Step-Wise Regression.[6] The program was designed so that various factors were analyzed as the dependent variable. Each subsequent step after the first independent variable was determined by the remaining independent variable having the highest partial correlation with the dependent variable. An F value of .01 was used as the cutoff point. The Bimed 05M factor analysis program was also utilized.

The following social and economic factors were selected.

1. Achievement Scores.--A measure of knowledge, skills, and understandings commonly accepted as desirable outcomes of the major branches of the curriculum.

2. Reading Scores.--A measure of reading skills for Grades 4, 6, 9, and 11, as determined by a standardized test.

3. Basic School Aid Formula Per Pupil.--The dollar measure of state support.

4. Pupil-Teacher Ratio.--The total average daily attendance divided by the total number of classroom teachers for each school district.

5. Median Grade Level of the Community.--The median level of schooling achieved for citizens of a census unit who are 25 years old or older (U.S. Census Bureau definition).

6. Title I Children.--The total number of children eligible under Title I Public Law 89-10 (ESEA 1965) divided by the school census for each school district.

7. Current Expenditures Per Pupil.--The amount of money spent per year per pupil for all current expenses--including administration, instruction, attendance, health services, pupil transportation, operation and maintenance of plant, fixed charges and community services--for each school district.

8. Personal Income Per Capita.--The total personal income of the district divided by the population of each school district.

9. Percent of Attendance.--The average daily attendance (ADA) divided by the total average daily membership (ADM) of each school district for the period of one school year.

10. Enrichment Expenditure (Leeway Money).--The amount spent by a local school district above the amount needed to participate in the basic school aid program.

11. Average Teacher's Salaries.--The total salaries of all teachers in a school district divided by the total number of teachers.

12. Assessed Valuation Per Pupil.--The assessed valuation of property divided by the number of pupils in average daily attendance for each school district.

13. Percent of Minority Students.--The number of minority students enrolled divided by the total school enrollment for each school district.

14. Percent of Students Enrolled.--The number of students in average daily membership (ADM) divided by the census of minors between the ages of 6 and 19 for each school district.

15. Percent of Population Born in a Different State.--The ratio of individuals who are native born to those individuals born in a different state for each school district.

16. Percent of Families Below Poverty Level.--The percent of families identified in the U.S. Census who fall below the national poverty level for each school district.

17. Percent of Citizens Over 65 Years of Age.--The ratio of citizens over 65 years of age to the total population for each school district.

18. Percent of Black Population.--The number of black residents divided by the total population for each school district.

19. State Aid Provided other than money distributed through the basic state aid formula (i.e., categorical grants) for each school district.

20. Local Required Effort.--The amount of money required by a local district to participate in the basic state aid program.

Virginia State Aid Formula

The Virginia State Aid Formula is classified as a Strayer-Haig-Mort

program. This formula is calculated using a uniform amount per teacher per pupil, although it mildly does take into consideration the educational needs of the students. The state allocation is determined by deducting a required local effort from the total calculated cost of the program. Therefore, state aid should be an inverse relationship of the local school district's wealth as measured by the real property tax. As indicated earlier, sixty-five percent of all state money was allocated according to the Strayer-Haig-Mort formula, while approximately twenty-four percent of state funds are distributed on the basis of a flat grant. The flat grant is one percent of the state sales tax distributed to the school district in accordance to the local school population. The remainder of state funds are allocated on the basis of the following categorical grants: Vocational Education Fund, Public Transportation, Teacher Education and Teaching Scholarship Fund, Teacher Sick Leave Fund, In-Service Training Fund, Summer School Fund, Public School Library Fund, Educational Television Fund, School Food Program, Man Power Training, Superintendents' Fund, Contingency Fund, Pilot Study Fund, and Adult Education Fund. Table I illustrates the percentage of school revenues provided by the three governmental levels from 1967-68 through 1972-73.

Table I

Percentage of School Revenue from State, Local, and Federal Sources

Year	State	Local	Federal
1967-68	37.3%	52.6%	10.1%
1968-69	40.7%	50.0%	9.3%
1970-71	33.8%	55.8%	10.5%
1971-72	34.2%	55.1%	10.6%[7]
1972-73	38.0%	52.0%	10.4%[8]

ANALYSIS OF DATA

The overall analysis was organized into segments for step-wise multiple-regression and factor analysis procedures. For the step-wise multiple-regression, the procedures were: (1) the basic state aid allotment per pupil as the dependent variable, excluding the factors of assessed valuation per pupil and local required effort per pupil, (2) other state aid per pupil as the dependent variable; and (3) using each achievement test scores as the dependent variable excluding the other achievement scores. A further analysis of step three was the exclusion of the percent of black students and percent of black population variables from the computation. These two variables were then included in the final set of data analyzed by step-wise multiple-regression.

The Factor analysis was computed twice. The first computation included all variables and a second analysis excluded the percent of black students and percent of black population variables.

Data were obtained for 20 of the selected factors from reports of the Virginia State Department of Education; this included eight different measures of achievement and reading. The remaining factors were obtained from the United States Department of Commerce and the Bureau of Census.

Data were obtained for the 26 selected factors for 128 of the 133 school districts. Four districts were not included in the study because of missing data while one was atypical and, therefore, excluded from part of the analysis.

STEP-WISE MULTIPLE-REGRESSION RESULTS

Basic State Aid

When the amount of basic state aid per pupil was examined on a simple correlation matrix it correlated significantly only with local required effort. Thus, a high negative relationship could be expected because of the nature of the state allocation formula.

Table II

Correlation Matrix

Variable Number	1	2	3	4	5	6	7	8	9
1	1.000	-0.042	-0.631*	-0.208	-0.138	-0.494*	-0.208	-0.191	-0.253
2		1.000	-0.003	0.007	-0.418	-0.136	0.428	0.358	0.505*
3			1.000	0.118	-0.041	-0.531*	-0.005	0.092	0.067
4				1.000	-0.099	-0.199	0.119	0.165	0.153
5					1.000	0.126	-0.064	-0.229	-0.284
6						1.000	-0.132	-0.363	-0.364
7							1.000	0.797*	0.792*
8								1.000	0.842*
9									1.000

Variable Number	10	11	12	13	14	15	16	17	18
1	0.403	-0.343	0.905*	-0.192	-0.055	0.034	0.022	0.072	-0.090
2	-0.229	-0.108	0.056	0.548*	-0.137	0.423	-0.048	0.470	0.454
3	-0.241	0.374	-0.580*	-0.098	0.176	-0.237	-0.038	-0.054	-0.135
4	-0.276	0.112	-0.150	0.072	-0.260	-0.042	0.051	0.046	0.028
5	0.089	-0.149	-0.106	-0.117	0.108	-0.200	-0.040	-0.764*	-0.233
6	0.608*	-0.346	0.421	-0.128	-0.089	0.100	-0.079	-0.083	-0.087
7	-0.617*	-0.308	-0.227	0.760*	-0.298	0.599*	0.000	0.375	0.619*
8	-0.829*	-0.081	-0.206	0.648*	-0.323	0.473	0.053	0.380	0.641*
9	-0.799*	-0.046	-0.225	0.821*	-0.292	0.644*	-0.013	0.564*	0.771*
10	1.000	-0.081	0.377	-0.580*	0.117	-0.243	0.010	-0.198	-0.496*
11		1.000	-0.344	-0.166	0.015	-0.109	0.161	0.104	-0.105
12			1.000	-0.160	-0.022	0.025	0.002	0.022	-0.062
13				1.000	-0.330	0.804*	-0.098	0.516*	0.840*
14					1.000	-0.580*	-0.048	-0.356	-0.509*
15						1.000	0.001	0.658*	0.880*
16							1.000	-0.014	-0.061
17								1.000	0.548*
18									1.000

Table II (Continued)

Variable Number	19	20	21	22	23	24	25	26
1	-0.635*	-0.701*	-0.608*	-0.638*	-0.613*	-0.622*	-0.614*	-0.592*
2	0.268	0.274	0.244	0.258	0.276	0.258	0.277	0.285
3	0.535*	0.557*	0.566*	0.549*	0.423	0.436	0.416	0.349
4	0.200	0.230	0.198	0.211	0.250	0.263	0.233	0.238
5	0.001	-0.027	-0.095	-0.102	-0.005	0.014	0.004	-0.012
6	-0.481*	-0.537*	-0.470	-0.505*	-0.536*	-0.530*	-0.484*	-0.458*
7	0.463	0.522*	0.394	0.465	0.494*	0.552	0.550*	0.565*
8	0.552*	0.611*	0.478	0.567*	0.591*	0.648*	0.632*	0.629*
9	0.564*	0.633*	0.510*	-0.599*	-0.628*	-0.656*	-0.659*	-0.668*
10	-0.619*	-0.685*	-0.543*	-0.627*	-0.657*	-0.711*	-0.679*	-0.670*
11	0.201	0.217	0.254	0.221	0.163	0.141	0.098	0.067
12	-0.536*	-0.604*	-0.500*	-0.543*	-0.490*	-0.519*	-0.522*	-0.508*
13	0.430	0.484*	0.376	0.435	0.461	0.480*	0.572*	0.529*
14	-0.110	-0.138	-0.147	-0.182	-0.134	-0.134	-0.144	-0.168
15	0.159	0.218	0.149	0.201	0.247	0.250	0.267	0.281
16	-0.138	-0.086	-0.035	-0.051	-0.033	-0.043	0.001	0.018
17	0.131	0.163	0.184	0.212	0.130	0.123	0.141	0.173
18	0.346	0.405	0.324	0.384	0.448	0.465	0.467	0.458
19	1.000	0.966*	0.839*	0.866*	0.770*	0.752*	0.752*	0.729*
20		1.000	0.840*	0.888*	0.823*	0.815*	0.797*	0.774*
21			1.000	0.964*	0.767*	0.742*	0.728*	0.700*
22				1.000	0.793*	0.785*	0.767*	0.752*
23					1.000	0.905*	0.874*	0.821*
24						1.000*	0.866*	0.824*
25							1.000*	0.941*
26								1.000*

*Significant at .05 level

An important point is that there was no significant relationship between basic state aid and the factors of achievement or assessed valuation per pupil. Perhaps this can be accounted for because of the following three factors: (1) only 65 percent of the state money is distributed through the equalization formula, (2) only 75 percent of all state and local revenues are used in equalization calculation, and (3) the 23 per cent of state funds distributed to local districts may be used as local required effort (i.e., state sales tax).

If achievement test scores are viewed as a measure of school districts'

educational needs and assessed valuation per pupil as a fiscal measure of wealth, then the basic state allotment neither distributed funds according to an educational needs priority nor does it fiscally equalize.

When the step-wise multiple-regression was utilized to study Basic State Aid as the dependent variable, all variables accounted for 46 percent of the variance. The factors of assessed valuation and local required effort were deleted because they are used in the state aid calculations and, therefore, resulted in intercorrelation. All factors excluding the two previously mentioned accounted for 46 percent of the variance and the eight included in Table III account for 39 percent of the variance.

Table III

Basic State Aid Dependent Variable

Item	Variable Entered	Multiple R	Multiple RSQ
1	Per Capita Income	.2836**	.0842
2	9th Grade Reading	.3884**	.1508
3	% Born in District	.4597**	.2113
4	Average Teacher Salary	.4895**	.2396
5	Percent FLP Families Below Poverty	.5222**	.2726
6	Median Schooling	.5703*	.3252
7	Percent Attendance	.5940*	.3528
8	School Population Census	.6280*	.3943

From analysis of the multiple correlation and the simple correlations it would appear the basic state aid formula had very little relationship with any of the selected factors. Because of the above results it would appear that the aspects of fiscal equalization would be very slight.

Other State Aid

Other state aid was defined as revenues allocated to school districts other than basic state aid such as categorical grants for vocational eduction, etc. This factor had no significant relationship with any of the other factors when the simple correlation matrix was examined (See Table II.) Also, other state aid did not correlate with either wealth measures or achievment test scores.

When the multiple step-wise regression was analyzed for other state aid and all factors were entered into the regression equation, only 24 percent of the variance in the dependent variable was accounted for as shown in Table IV.

Table IV

Other State Aid Dependent Variable

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent of people over 65 years of age	.1653	.0273
2	Sixth Grade Achievment Test Score	.2374	.0564
3	Med. Schooling	.3154	.0995
'		'	'
'		'	'
'		'	'
25	Percent of Black Students	.4962	.2462

Therefore, approximately 60 million dollars distributed in the form of categorical aid for the year 1972-73 had no significant relationship with the variables used in this study.

Current Operating Expenses

On a simple correlation matrix the factor, current operating expenses, correlated significantly with the following factors: (1) Percent born in another state (positively), (2) per capita income (positively), (3) local required effort (positively), (4) average teacher salaries (positively). (5) teacher pupil ratio (negatively), and (6) leeway funds (positively). Since all of the factors that had significant correlations with current operating expenses were fiscal measures, it would be suspected that they would correlate highly. Also, it should be noted that no significant relationship existed between achievement test scores and current operating expenses per pupil.

When the step-wise multiple-regression was applied to the data, the following fiscal measures factors relating to the basic state aid formula were deleted: (1) assessed valuation per pupil, (2) basic state aid per pupil, (3) other state aid per pupil, (4) average teacher salaries, (5) local required effort per pupil, and (6) leeway money per pupil. The first five factors that entered the regression equation accounted for 75 percent of the variance, while all factors accounted for 78 percent of the variance.

Table V

Current Operating Expenses

Item	Factor Entered	Multiple R	Multiple RSQ
1	Per Capita Income	.6435**	.4141
2	Percent of Families Below Poverty Level	.7859**	.6177
3	Teacher Pupil Ratio	.8506**	.7325
4	CN/Adm	.8602**	.7399
5	4th Grade Reading	.8677**	.7530

Achievement Test Scores

This study used achievement test scores for each school district as a quasi-output measure of education. Although this measure was used, the authors recognize that the measurement of educational output is an extremely complex problem. The subject of achievement test scores has generated considerable controversy in the field of education. For example, there are the arguments that achievement test scores measure nothing more than the ability of a child to take a test, that they only measure the cognitive domain, and that achievement tests are culturally biased. The authors further recognize that achievement tests do not necessarily measure the intangible aspects of student enjoyment and the development of societal or cultural values which has tremendous influence on a person's lifestyle.

Achievement test scores were analyzed by excluding all other achievement test scores except the one used as the dependent variable. Two analyses were then conducted in which the factors of percent of black students and percent of black population were first included and then excluded.

Achievement test scores were used for the following: fourth grade composite score, fourth grade reading, sixth grade reading, sixth grade composite, ninth grade reading, ninth grade composite, eleventh grade reading, and eleventh grade composite. Each score was analyzed using it as the dependent variable while excluding the other achievement test scores. When analyzing all achievement test scores on the simple correlation matrix shown in Table II only four factors were significant for all grade levels. These factors were: (1) percent of black students

(negatively), (2) percent of black population (negatively), (3) percent of families below poverty (negatively), and (4) per capita income (positively). The factor of attendance correlated positively with fourth grade reading, sixth grade composite, sixth grade reading, and ninth grade composite. The percent of Title I children correlated positively with sixth grade reading, sixth grade composite, fourth grade reading, ninth grade reading, ninth grade composite, and eleventh grade composite.

The percent born in another state factor correlated positively with all achievement scores except sixth grade composite and fourth grade composite. The median schooling level correlated positively with all factors except the fourth grade composite.

There were sixteen different statistical computations for achievement test scores as analyzed by the step-wise multiple regression. Tables VI through XIII show the multiple R for all achievement levels but excluding the two factors (1) percent of black students and (2) percent of black population. Tables XIV through XXI comprise the factors entered into the regression formula including the two previously omitted.

Variables Omitted

Analysis of achievement and reading test scores revealed a consistent pattern of relationship to percent of attendance and the income measures of families below poverty and per capita income for the 4th, 6th, 9th, and 11th grades. An interesting variation to the pattern was the effect of leeway monies upon 9th grade reading scores. It is hypothesized that the combined effects of attendance and wealth (which differentiates school divisions) culminates in the 9th grade, the point of greatest achievement divergence. The effects of the major independent variables

are so great that the previous minor effects of leeway become pronounced, rather than any new spending efforts of rich districts. Tables VI through XIII document the relationship of achievement and reading dependent variables and the selected independent variables under study. The reader is reminded that percent of black students and percent of black population variables are omitted in this series of subanalyses.

Table VI

Dependent Variable: Fourth Grade Achievement Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent attendance	0.5685**	0.3201
2	Per Capita Income	0.7376**	0.5441
14	Med. Sch.	0.7983	0.6373

Table VII

Dependent Variable: Fourth Grade Reading Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent FLP	0.6269**	0.3930
2	Percent Att.	0.7490**	0.5610
3	Per Capita Income	0.7920**	0.6272
4	Teacher-Pupil Ratio	0.8025**	0.6441
18	Other State Aid	0.8340	0.6956

Table VIII

Dependent Variable: Sixth Grade Achievement Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent FLP	0.6193**	0.3836
2	Percent Att.	0.7360**	0.5418
3	Av. Teacher Salary	0.7673**	0.5887
15	CN/ADM	0.8306	0.6899

Table IX

Dependent Variable: Sixth Grade Reading Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent FLP	0.6847**	0.4689
2	Percent Att.	0.7953**	0.6325
3	Av. Teacher Salary	0.8304**	0.6896
19	A.V.	0.8731	0.7624

Table X

Dependent Variable: Ninth Grade Achievement Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent FLP	0.6574**	0.4321
2	Percent Att.	0.7117**	0.5065
3	Per Capita Income	0.7495**	0.5618
4	LRE	0.7713**	0.5949
5	Percent Title I	0.7800**	0.6034
6	Leeway	0.7901**	0.6243
7	CN/ADM	0.7982**	0.6371
15	Av. Teacher Salary	0.8121	0.6594

Table XI

Dependent Variable: Ninth Grade Reading Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent FLP	0.7113**	0.5060
2	Percent Att.	0.7618**	0.5804
3	Leeway	0.7935**	0.6297
4	Basic State Aid	0.8057*	0.6491
5	Per Capita Income	0.8148*	0.6639
6	Current Expenditures	0.8236*	0.6783
7	CN/ADM	0.8309*	0.6904
15	Teacher-Pupil Ratio	0.8503	0.7230

Table XII

Dependent Variable: Eleventh Grade Achievement Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Families Below Poverty	0.6793**	0.4614
2	Percent Attendance	0.7275**	0.5292
3	Per Capita Income	0.7676**	0.5892
4	Local Required Effort	0.7893**	0.6230
5	Leeway Funds	0.7971**	0.6354
17	Assessed Valuation	0.8213	0.6746

Table XIII

Dependent Variable: Eleventh Grade Reading Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Families Below Poverty	0.6697 **	0.4485
2	Per Capita Income	0.7050 **	0.4970
3	Percent Attendance	0.7470 **	0.5579
4	Local Required Effort	0.7653 **	0.5857
15	Percent Over 65	0.7981	0.6370

Minority Variables Included

The inclusion of the percent of black students and percent of black population as independent variables affected both the amount of achievement variance accounted for and the ranking of independent variables in relation to achievement and reading. Variance accounted for increased in the following percentages:

4th grade achievement, four percent (4%)

4th grade reading, four percent (4%)

6th grade achievement, four percent (4%)

6th grade reading, five percent (5%)

9th grade achievement, six percent (6%)

9th grade reading, four percent (4%)

11th grade achievement, five percent (5%)

11th grade reading, six percent (6%)

For the 4th and 6th grades, reading and achievement relationship, the major variables, were the percent of black students and median

education level of the population. Percent of attendance was third in importance and measures of wealth were reduced. However, in the 9th and 11th grades, the poverty indicator of wealth became most important, followed by percentage of black students. The influence of wealth in later grades was reinforced by the importance of per capita income, particularly in 9th and 11th grade reading. Tables XIV through XXI document the relationship of reading and achievement dependent variables and the full component of independent variables of this study.

Table XIV

Dependent Variable: Fourth Grade Achievement Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Black Students	0.6082*	0.3700
2	Median Grade Level	0.7115*	0.5063
3	Percent Attendance	0.7536*	0.5679
4	Percent Black Population	0.7691*	0.5916
5	Per Capita Income	0.7805*	0.6092
18	Other State Aid	0.8222	0.6761

Table XV

Dependent Variable: Fourth Grade Reading Test Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Black Students	0.6377*	0.4067
2	Median Grade Level	0.7825*	0.6123
3	Percent Attendance	0.8090*	0.6544
4	Per Capita Income	0.8268*	0.6836
5	Teacher-Pupil Ratio	0.8330*	0.6938
6	Percent Black Population	0.8395*	0.7047
18	Other State Aid	0.8587	0.7374

Table XVI

Dependent Variable: Sixth Grade Achievement Test Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Black Students	0.6352*	0.4035
2	Median Grade Level	0.7724*	0.5966
3	Percent Attendance	0.7952*	0.6324
4	Other State Aid	0.8084*	0.6535
5	Percent Black Population	0.8182*	0.6694
18	CN/ADM	0.8522	0.7262

Table XVII

Dependent Variable: Sixth Grade Reading Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Black Students	0.7009*	0.4913
2	Median Grade Level	0.8528*	0.7273
3	Percent Attendance	0.8689*	0.7549
4	Per Capita Income	0.8814*	0.7769
5	Percent Black Population	0.8864*	0.7858
15	Local Required Effort	0.9019	0.8134

Table XVIII

Dependent Variable: Ninth Grade Achievement Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Families Below Poverty	0.6574 *	0.4321
2	Percent Black Students	0.7596 *	0.5769
3	Per Capita Income	0.7908 *	0.6254
4	Percent Black Population	0.8055 *	0.6489
5	Median Grade Level	0.8143 *	0.6631
18	Teacher-Pupil Ratio	0.8441	0.7125

Table XIX

Dependent Variable: Ninth Grade Reading Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Families Below Poverty	0.7113*	0.5060
2	Percent Black Students	0.8002*	0.6403
3	Median Grade Level	0.8289*	0.6870
4	Percent Black Population	0.8407*	0.7069
18	Local Required Effort	0.8753	0.7661

Table XX

Dependent Variable: Eleventh Grade Achievement Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Families Below Poverty	0.6793*	0.4614
2	Percent Black Students	0.7742*	0.5994
3	Median Grade Level	0.8096*	0.6555
4	Per Capita Income	0.8194*	0.6714
5	Local Required Effort	0.8285*	0.6864
18	Assessed Valuation	0.8490	0.7208

Table XXI

Dependent Variable: Eleventh Grade Reading Scores

Item	Variable Entered	Multiple R	Multiple RSQ
1	Percent Families Below Poverty	0.6697*	0.4485
2	Percent Black Students	0.7568*	0.5728
3	Per Capita Income	0.8024*	0.6439
4	Median Grade Level	0.8109*	0.6576
5	Local Required Effort	0.8183*	0.6697
18	Average Teacher Salary	0.8354	0.6979

If composite achievement and reading scores are considered as valid quasi-output measures of schooling, then this analysis concludes there are four basic relationships to the variables under study. In general, achievement and reading correlates negatively with percent of black students and percent of families below poverty and positively with percent of students in attendance and per capita income.

Because the potential for methodological misinterpretations was present, a second analysis of the data was conducted.

FACTOR ANALYSIS RESULTS

Data were re-analyzed using a rotated factor matrix. Factor analysis revealed four general clusters with a combined eigenvalue of 18.64* and accounting for .72 cumulative proportion of the variance. The factors, in order of accounting, dealt with systematic commonalities about: (1) race to achievement and holding power, (2) pupil/teacher ratio to current expenditures and leeway monies, (3) basic state aid to local required effort and assessed valuation, and (4) poverty level to per capita income, educational level, mobility of school district citizens, and average teacher salaries.

Factor 1, with an eigenvalue of 11.28 and accounting for 43 percent of the total variance, found a strong inverse relationship between percent of black students and citizens in a school district and high school attendance level and achievement scores (composite and reading scores in the 4th, 6th, 9th, and 11th grades). An analysis of Factor 1 also reveals that the basic state formula fails to recognize or to allocate state aid to those school divisions that have the greatest educational needs (i.e., low achievement test scores).

Table XXII illustrates the inverse relationship of key variables and the relative position of the basic state aid variable.

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*Five factors with eigenvalue less than 1.0 were eliminated. One factor with eigenvalue of 1.20 was eliminated as uninterpretable.

Table XXII

Factor 1

High	Low
+ .84 6th grade reading	- .88 Percent Black Students
.83 4th grade reading	- .80 Percent Black Population
.83 4th grade composite	
.82 6th grade composite	
.77 Percent Attendance	
.74 9th grade composite	
.72 9th grade reading	*** basic state aid .05
.71 11th grade composite	
.68 11th grade reading	

In-depth analysis of school divisions at the extremes reveal the extent of difference in selected variables. Table XXIII shows the eight extreme school divisions identified by Factor 1.

Table XXIII

Extreme School Divisions--Factor 1

Code Name	Score	Percent Black Students	Percent Black Population	4th grade Reading	6th grade Reading	Percent Attendance
			Highest Factor Divisions			
H1	+2.01	9.7	8.9	5.3	7.1	96
H2	+1.83	6.6	4.4	5.2	7.9	95
H3	+ 1.74	13.6	10.3	5.3	7.3	95
H4	+1.68	0.0	2.6	5.3	7.1	96
Average	+1.81	7.4	6.5	5.3	7.4	95.5

Table XXIII (Continued)

Lowest Factor Divisions

Code Name	Score	Percent Black Students	Percent Black Population	4th grade Reading	6th grade Reading	Percent Attend-ance
L1	-2.51	84.6	74.2	3.1	4.7	91
L2	-2.44	98.4	65.5	3.3	4.7	92
L3	-2.17	85.9	63.3	3.6	5.1	90
L4	-2.11	70.2	42.0	3.7	5.1	89
Avg.	-2.31	84.8	61.2	3.5	4.9	90.5

Detailed discussion of the crucial relationship between poverty and race will be deferred until presentation of Factor 4. For this factor, the percent of families below poverty level was -.44, indicating a partial but weak relationship.

Factor 2, with an eigenvalue of 4.43 and raising the cumulative proportion of total variance to 60 percent, found a strong inverse relationship between pupil/teacher ratios and current expenditures and leeway monies. Factor 2 shows the basic state aid formula had no distinction or significance in this relationship. Table XXIV shows the inverse relationship of key variables and the relative position of the basic state aid variable.

Table XXIV

Factor 2

High	Low
+ .81 current expenditures	- .78 pupil/teacher ratio
- .66 leeway money	
***basic state aid .00	

This factor could be interpreted to mean the wealthier school districts who raise (leeway) and spend (current expenditures) more money for education allocate resources to lower the pupil/teacher ratio. In-depth analysis of school divisions at the extremes reveals differences are also related to a rural-suburban phenomena. Table XXV shows the eight extreme school jurisdictions identified in Factor 2.

Table XXV

Extreme School Jurisdictions--Factor 2

Code Name	Score	Pupil/Teacher Ratio	Current Expenditures	Leeway
(Highest Factor School Divisions)				
H1	+3.58	13.7	1528	691
H2	+3.52	14.5	1516	592
H3	+3.46	15.8	1647	658
H4	+2.30	17.2	1157	473
Average	+3.21	15.3	1462	603
(Lowest Factor School Divisions)				
L1	-3.59	30.6	709	179
L2	-1.51	20.2	633	100
L3	-1.44	21.6	640	107
L4	-1.41	25.5	686	106
Average	-1.99	24.5	667	123

There was no systematic difference between extreme divisions according to race. The highest factor divisions had two, twelve, thirty-one, and seventy percent black students respectively, while the lowest

factor divisions had forty-four, twenty-one, six, and five percent respectively.

Factor 3, with an eigenvalue of 1.83 and raising the cumulative proportion of the variance to 67 percent, found a relatively strong inverse relationship between basic state aid and local required effort. A significantly weaker inverse relationship was found between basic state aid and assessed valuation.

The confounding aspects of using some of the same data to compute basic state aid and local effort makes the inverse relation somewhat suspect as a true measure of fiscal equalization in Virginia. Table XXVI shows the inverse relation of key variables.

Table XXVI

Inverse Relation of Key Variables

High	Low
+ .90 basic state aid	- .83 local required effort
	- .59 assessed valuation

Analysis of school divisions at the extremes reveals the extent of difference in selected variables. Table XXVII on the following page shows the eight extreme jurisdictions identified by Factor 3.

When actual aid from the state is compared to ability to support education, individual school division discrepancies are revealed. Three of the four highest factor divisions are small, rural school divisions, while three of the four lowest factor divisions are large and suburban,

perhaps indicating competition for dollars by other municipal services. The exception in the lowest factor divisions has a high assessed valuation due to the location of a nuclear power plant in a small, rural jurisdiction.

Table XXVII

Extreme School Jurisdictions--Factor 3

Code Name	Score	Basic State Aid	Local Required Effort	Assessed Valuation
	(Highest Factor School Divisions)			
H1	+2.13	364	113	18,782
H2	+1.85	364	97	16,195
H3	+1.78	339	133	22,110
H4	+1.68	353	117	19,568
Average	+1.86	355	115	19,161
	(Lowest Factor School Divisions)			
L1	-3.25	175	582	97,006
L2	-2.59	216	661	110,217
L3	-1.98	210	513	85,627
L4	-1.92	175	364	60,591
Average	-2.43	194	530	88,360

Factor 4, with an eigenvalue of 1.20 and accounting for 72 percent of the cumulative proportion of the total variance, found a strong inverse relationship between percent of families below the poverty level and percent of citizens born out of state, median school years, per capita income per pupil, and average teacher salaries. Factor 4 also shows the basic

state aid has no bearing in terms of this relationship. Table XXVIII shows the inverse relationship of key variables and the relative position of basic state aid.

Table XXVIII

Factor 4

High	Low
+ .81 median school year	- .73 percent families below poverty level
+ .79 percent born out of state	
+ .77 per capita income	
+ .67 average teacher salary	
*** basic state aid .00	

In-depth analysis of school divisions at the extremes reveals the extent of difference in selected variables. Table XXIX shows the eight extreme jurisdictions identified in Factor 4.

Table XXIX

Extreme School Jurisdictions--Factor 4

Code Name	Score	Percent Less Than Poverty Level	Median School Years	Percent Born Out of State	Per Capita Income Per Pupil	Average Teacher Salaries
	(Highest Factor School Divisions)					
H1	+4.16	3.5	13.5	63.1	4537	12,288
H2	+2.25	7.8	13.5	49.7	3066	9,034
H3	+2.20	3.7	13.3	67.5	5424	13,127
H4	+1.95	9.2	12.3	54.2	3098	8,903
Average	+2.64	6.0	13.1	58.6	4031	10,352

Table XXIX (Continued)

Code Name	Score	Percent Less Than Poverty Level	Median School Years	Percent Born Out of State	Per Capita Income Per Pupil	Average Teacher Salaries
	(Lowest Factor School Divisions)					
L1	-1.97	39.5	7.6	16.3	1480	8,191
L2	-1.79	30.5	8.0	7.6	1980	8,178
L3	-1.78	21.9	10.0	15.7	1889	8,177
L4	-1.68	33.9	7.6	7.3	1527	8,227
Average	-1.86	31.2	8.3	11.7	1719	8,194

Because of the controversy in interpreting school data since the Coleman report* it was decided to run a sub-comparison of those lowest factor divisions identified by Factor 4 (poverty) and the lowest factor divisions identified by Factor 1 (race). Table XXX shows the extreme low factor school divisions** from Factor 1 as they relate to the factor score and key variables of Factor 4.

Table XXX

Extreme Low Factor School Divisions--Factor 1/Factor 4

Factor 1 Systems	Factor 4 Scores	Percent Less Than Poverty Level	Median School Years	Percent Born Out of State	Per Capita Income Per Pupil	Average Teacher Salaries
F11	-0.01	28.4	8.5	3.4	1621	7,923
F12	-0.59	26.4	8.5	5.7	1938	8,402
F13	+0.93	13.3	11.1	20.2	3168	10,955
F14	-0.19	22.8	9.9	15.3	2225	7,767
Average	+0.14	22.7	9.5	11.2	2238	8,761

*James Coleman, et al., Equality of Educational Opportunity. Washington,D.C.: Government Printing Office, 1966.

** The one high percent black division with high assessed valuation caused by the recent location of a nuclear power plant was removed because of possible skewing.

In Virginia, the poorest school divisions (by percent of families at less than poverty level and low per capita income) are not the divisions with the highest proportion of black students identified in Factor 1. However, this conclusions must recognize that one of the Factor 1 divisions is a city, which affects such variables as average teacher salaries, median school year, and per capita income.

To complete the sub-comparison of race to poverty, the lowest Factor 4 divisions were compared by Factor 1 scores and key variables of that Factor. Table XXXI shows the results.

Table XXXI

Lowest Factor 4 Divisions Compared by Factor 1 Scores and Key Variables

Factor 4 Systems	Factor 1 Scores	Percent Black Students	Percent Black Population	4th grade Reading Score	6th grade Reading Score	Percent Attend-ance
F41	+.18	0.5	1.9	4.9	5.7	93
F42	+.87	17.3	16.5	4.6	6.4	95
F43	+.09	1.8	5.8	4.3	6.4	96
F44	+.31	0.3	2.4	4.1	5.8	94
Average	+ .36	4.9	6.6	4.5	6.1	94

If the official data sources can be believed, the four poorest white (less than 5 percent black students average) school division children read one grade better in the 4th grade when compared to the four school divisions with the highest proportion of black students (84.8 average) and a higher standard of living. The advantage is increased to 1.2 grades when the 6th grade reading scores are compared. While these data seem to support

Coleman's findings about schooling and may be positively interpreted by those promoting the heredity theory, we urge extreme caution in reaching either of these findings. The historical context of Virginia education, the lack of fiscal rationale for the application of state aid (except perhaps political influence) and the remarkable similarities of some data scores (for example, percent of attendance) supports the need for recollection and subsequent re-analysis of data before placing general confidence in our present analysis. In effect, this analysis has pointed to conceptual and methodological considerations which we hope will focus future research on schooling allocations within Virginia.

CONCLUSIONS, FINDINGS, AND SUMMARY

The Educational Variable

This study sought to determine whether the Virginia state aid formula was established according to a rationale of strict dollar considerations or attempted to recognize areas of disparity and special educational needs. Analysis indicates that the formula does not allocate according to recognized social, economic or educational disparities, and has little in the way of a true rationale of fiscal equalization. (Certainly, the State of Virginia is at the stage of development when basic issues of resource allocation to the educational sector need to be faced.) The authors feel that the current allocation scheme promotes inequities which will not be resolved by a program of fiscal equalization. Allocation should be based upon easing the overt disparities that exist in the state and are, in part, caused by social, economic and educational precedents in state governance.[9]

Various inquiries into the economics of education can be categorized into three general groups based upon methodological assumptions and/or conclusions reached. The majority of studies assume schooling of unquestionable worth and quality an issue directly related to cost. Characteristic of this stance is a statement by Vincent, et al., who reviewed finance studies from the turn of the century to 1958:

> The relation between cost and quality has been investigated over a long period of time and by many able researchers. The results are impressive: The overwhelming evidence from studies between cost and quality shows that, in schools . . . when you spend more you get more.[10]

A second group of studies question the merits of schooling and offer qualified support for the relation of quality to cost. The source of questioning has to do with the operational specification of "educational variables" which define the processes and products of schooling. An example of this stance is the study by Benson et al[11] which concluded that school monies spent in a thoughtful way can make a positive difference in schooling effectiveness, but stipulated the following methodological qualification:

> ...reform recommendations . . . reflects the absence of precise knowledge regarding many facets of the educational process . . . we have [not] been able to validate the utility of many of our effectiveness proposals. Such validity must await the development of a much more thorough understanding of how formal education can and does work.[12]

Although Virginia, as of 1972-73, has not made the fundamental value judgment that allocation according to recognized disparities is a valid position, we hope that recognition is forthcoming. With the new formula adopted by the legislature in the Spring of 1974, it is hoped that indicators of educational or schooling disparity should then be of major concern. The traditional indicators used, such as pupil/teacher ratio, are negatively related to current expenditures and leeway monies. Certainly these educational indicators are a far cry from more current measures of teacher quality (e.g., verbal test scores, prestige of undergraduate school), and even further from the future measures of teaching and learning processes as effectiveness variables.

It seems clear that the operational specification of schooling variables will dominate much of the concern of equity in allocation of educational resources. This concern has been generated by a third grouping of finance studies which directly question the merits of schooling and see a negative relation between increased costs and quality. Since 1966 and the famous Coleman report, two basic questions have delineated the issue in definition of schooling variables: (1) what discrepancies can be directly attributed to the schools? (2) Do schools have the capacity to make a difference in easing discrepancies? Coleman summed up his findings which were a direct blow to the use of allocation:

> Two points, then, are clear. (1) Minority children have a serious educational deficiency at the start of school, which is obviously not the result of school and (2) they have an even more serious deficiency at the end of school, which is obviously in part a result of school.[13]

The survey went further by stating that achievement varied as great within the same school as between schools. Perhaps the most controversial finding concerning the issue of allocation by identified disparity was that additional resources used to rectify special needs (e.g., amount spent per pupil, number of books, physical facilities) made no appreciable difference in achievement.[14] This conclusion begged the further question: If schools make no difference, why not? One answer was presented by Jensen,[15] achievement difference is the result of intelligence variation caused by genetic factors. Specifically, heredity explains more difference in individuals and groups' I.Q.'s than does environment. Due to the political climate of U.S. society in the 1960's, the Jensen article spoke directly to blacks and provided a rationalization to blame the compulsory "client" of the inner city for achievement failures. It

is possible to envision findings of this study as further "proof" that blacks are inherently low achieving vis-a-vis their white counterparts in comparable poor school divisions. We would argue that the heredity question is moot in Virginia until resources are allocated to rectify current patterns of inequity which seem to focus more upon political influences than clear distinctions of race or low socio-economic status.

Most of the current counterattacks to the heredity argument focus upon the specific indictment of schools as perpetuating inequalities and class distinctions through institutional structure and professionalization. Several authors have charged schools with maintaining a "meritocracy" where successful competitors with the highest I.Q.'s would defend their own advantage far more skillfully and successfully than old aristocracies. Thus, schools helped society to solidify inherited castes where the traditional liberal idea that stupidity results from inheriting poverty is reversed and poverty results from inherited "stupidity." Schools do make a difference; they guarantee disadvantaged clients stay that way. An extension of this logic would mean that increased allocations to compensate for special needs only serve to reinforce existing control devices and make perpetuation of being disadvantaged more covert and sophisticated.

Within the last two years several major reports have focused upon the issue of inequality in schools. Analyzing the Coleman data, Moynihan and Mosteller[16] and Jencks, et al.[17] have reached the following conclusions: (1) black and white schools are close to equal in "quality"; (2) the achievement gap of black and white children gets wider over twelve years of schooling; (3) therefore, no reason to suppose increasing the flow of resources into the schools would affect the outcome in terms of

achievement, let alone eliminate inequality. In simple terms, the base of resources for all schools was very similar, and even when special concentrations of resources were focused upon the disadvantaged (e.g. compensatory education), there was no significant increase in achievement.

Thus, the final question of schooling legitimacy has been voiced and the answer speaks to whether the institution of public schools should be abolished.

It seems clear that our study is limited to issues of disparity identification and does not add concrete evidence for the staunch support, qualified support, or illegitimacy of the schooling institution. Yet we would like to use the gross "educational factors" available for our data as license to speculate upon two areas of research concern and, hopefully, considerations in future endeavors. First, we see little hope of "rational concensus gained through objective appraisal of empirically derived data" about the values of schooling and call for overt statements of researcher bias in variable specification and interpretation of results. Bluntly stated, attacking or perpetuating the legitimacy of the present schooling institution creates too many vested interests and too high policy stakes for many of us to remain scientific. As Hodgson puts it: "Once the data are presented, is the glass to be judged half full or half empty?"[18] In delineating future "educational variables" a researcher statement of preference for support or rejection of the public school seems crucial as a first premise rather than an ex post facto rationalization.

A second area of clarification must be the implicit policy assumptions that underlie the methodological format of the researcher. There

are concrete examples in the analysis of community power that the processes of inquiry to a large extent predetermine the findings.[19] This lesson is applicable to questions of educational effectiveness. Of particular importance to the specification of "educational variables" are the assumptions about the policy conversion process within the institutional structure. Conversion implies the basic properties of educational policymaking and decision realities by which input variables effect outputs of the system. It is the processes by which resources are authoritatively allocated.[20] Many present schemes to explore either fiscal or program issues seem to assume that the budgetry and/or curricular decision processes are constant and static;[21] a value maximizing balance of input to output variables.[22] Despite abstract reference to the "feedback" concept and its effect on "critical path" allocations, the realities of large institutional structures negate essential policy directions once set.[23] A basic issue which is ignored in many input-output policy models is how decisions are made by educators. Dynamic realities of the conversion process create "instrumental," "extra," or "bounded" decision rationality,[24] which denotes the political compensation necessary to apply conceptual models to decision making within the schooling institution. Actual decision making can no more be explained as a constant process standardized by legal and structural stipulation than an institution can be adequately explained as a formal charting of position expectations. When considering questions of equalization and effectiveness, whether fiscal or program, the policymaking of variables which convert social, economic, and educational inputs must be considered in dynamic terms. Prescriptive assumptions of classic rationality[25] are

misleading. For example, the economic decision system has shown considerable latitude in the application of "free market" rationales for competition and profit.[26] A descriptive model provides a methodological potential for enough flexibility to consider "conversion" variables that could recognize "second best" solutions and "muddling through" as valid predictors of the educational policy process.[27]

It is our opinion that methodological specification of "educational variables" that deal with policymaking and teaching-learning processes must be clarified according to structural, normative, and personal interactive systems[28] which affect conversion.

A second area of methodological specification of educational factors would be to extract underlying assumptions of present "educational" variables. For example, "achievement test scores" would focus attention on underlying assumptions of the necessity of reading, math, social studies and language arts as schooling functions. "Teachers with advanced degrees" would focus issues of professionalization and expertise. "Percent of conventional classrooms" would direct questions to the concepts of facilities while "percent of high school graduates going to college" could open inquiry of academic preparation. In each case, alternative assumptions could become variables to supplement our conventional measures and, with it, new definitions of "product," "success," and "disadvantaged."

SUMMARY

The evolution of public school financing systems has traced concern of equal access to dollars to opportunities for equal education which

recognizes individual needs or deficiencies to questioning whether schooling makes a difference. We have attempted to provide empirically based data supporting the necessity of equity in the allocation of state educational funds. Effects of the Virginia state aid formula support the contention there is nothing so unequal as the equal treatment of unequals.

Assuming continued attempts to validate program equalization vis-a-vis fiscal equalization, we have speculated upon the research question of whether schools make a difference. Three different interpretations of base line data (schools make no difference, schools should be supported for non-traditional reasons, schools are making positive differences), leads us to conclude that the latest evolution of financing research has exceeded the possibility of objective, impartial conclusion. Fundamental policy implications affective the very structure of schooling has made research a form of advocacy planning. In light of this controversy, we call for overt specification of conceptual and methodological biases in future research endeavors.

FOOTNOTES

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2. Serrano V. Priest, Supra.

3. Gordon, E. W. and Wilkeson, D. A. Compensatory Education for the Disadvantaged. College Entrance Examination Board, New York, 1968.

4. Johns, Thomas and Forester, Janet (eds) Public School Finance Program 1971-72. U.S. Department of Health, Education, and Welfare. Washington, D.C.

5. Johns, R. L. and Salmon, R. G. "The Financial Equalization of Public Schools Support Programs in the U.S. for the School Year 1968-69." Volume IV, National Educational Project, p. 138.

6. BMD Biomedical Computer Programs. Health Sciences Computing Facility, University of California, Los Angeles, 1964.

7. "Where Virginia Ranks 1972", Virginia Education Association, Richmond, Va., pp. 14-17.

8. Annual Report 1972-73, Superintendent of Public Instruction, State Department of Education, Richmond, Va., Dec. 1973, p. 213.

9. See Virginia Dabney, Virginia: The New Dominion, New York: Doubleday, 1971; V. O. Key, Jr., Southern Politics, New York: Vintage Book 1962, for specification of Virginia precedents.

10. William Vincent et al., Does Money Make a Difference? New York: Teachers College, 1958, p. 1.

11. Charles Benson et al., Final Report: Senate Select Committee on School District Finance. June 12, 1972.

12. Ibid., p. 29.

13. James Coleman, et al., Equality of Educational Opportunity. Washington, D.C.: Government Printing Office, 1966.

14. Ibid.

15. Arthur Jenson, "How Much Can We Boost I.Q. and Scholastic Achievement?" Harvard Education Review, Winter, 1969.

16. Moynihan and Mosteller, On Equality of Educational Opportunity.

17. C. Jencks, et al., Inequality: Reassessment of Effects of Family and Schooling in America.

18. Godfrey Hodgson, "Do Schools Make A Difference?" Atlantic Monthly, October, 1973, pp. 35-46.

19. See James Curtis and John Petras "Community Power, Power Studies and the Sociology of Knowledge," Human Organization, Vol. 29, No. 3, Fall, 1970, pp. 204-213, and John Walton "Substance and Artifact: The Current Status of Research on Community Power Structure," American Journal of Sociology, Vol. 71, 1966, pp. 430-438. For an opposite conclusion see Terry Clarke et al., "Discipline, Method, Community Structure and Decision Making: Role and Limitations," American Sociologist, Vol. 3, 1968, pp. 214-217.

20. David Easton, A Systems Analysis of Political Life, New York: Wiley, 1965.

21. Several arguments specified in greater detail in C. David Billings and John Segler "Empirical Evidence of Economies of Scale in Education as a Justification of Differentials per Student," Journal of Law and Education, Vol. 2, No. 4, Oct., 1973, pp. 667-672.

22. An example of this is F. L. Golladay and I. Adelman "Socio-Economic Policy Alternatives: A Parametric Programming Analysis," Behavioral Science, Vol. 17, 1972, pp. 204-220.

23. See C. Lindblom and D. Braybrooke, A Strategy of Decision, New York: Free Press, 1963.

24. See Yekehzel Dror, Public Policy Making Re-examined, San Francisco: Chandler, 1968, pp. 149-155; Herbert Simon, Models of Man, New York: Wiley, 1967.

25. Herbert Simon, "A Behavioral Model of Rational Choice," Quarterly Journal of Economics, 1955; O. A. Davis, "Empirical Evidence of Political Influences Upon the Expenditure Policies in Local Schools," in J. Margolis (ed.) The Public economy of the Urban Community, New York: Free Press, 1965.

26. J. Margolis, "The Analysis of the Firm: Rationalism, Conventionalism, and Behavioralism," Journal of Business, Vol. 31, 1958.

27. See Graham Allison, Essence of Decision: Explaining the Cuban Missile Crisis, Boston: Little, Brown, 1972; also D. Wiles, "Comments on Socio-Economic Policy Alternatives . . ." Behavioral Science, Vol. 19, No. 1, January, 1974, pp. 52-55.

28. Allison, ibid., provides guidelines for operationalization of each system. Basic objections to this survey type conceptualization presented in Benson et al., op. cit., pp. 30-31.